Claims

We claim:

1. A method for scanning for an object within a region, comprising:

scanning the region using a Low Discrepancy Curve scanning scheme;

determining one or more characteristics of the object in response to said scanning; and

generating output indicating the one or more characteristics of the object.

2. The method of claim 1, further comprising:

generating a Low Discrepancy Sequence of points in the region; and

calculating a Low Discrepancy Curve in the region based on the Low Discrepancy Sequence of points;

wherein said scanning the region using a Low Discrepancy Curve scanning scheme comprises:

measuring the region at a plurality of points along the Low Discrepancy Curve.

3. The method of claim 2, wherein said generating a Low Discrepancy Sequence of points in the region comprises generating a plurality of points wherein any location in the region is within a specified distance of at least one of the Low Discrepancy Sequence of points.

4. The method of claim 2, wherein said calculating a Low Discrepancy Curve comprises:

for each successive pair of the Low Discrepancy Sequence of points:

determining one or more orthogonal line segments which connect the pair of points; and

re-sampling the one or more orthogonal line segments to generate a Low Discrepancy Curve segment;

wherein the Low Discrepancy Curve comprises a contiguous sequence of the Low Discrepancy Curve segments from the successive pairs of the Low Discrepancy Sequence of points.

5. The method of claim 4,

wherein the one or more orthogonal line segments comprises a first sequence of points, wherein the first sequence of points defines a first trajectory having a first maximum curvature;

wherein said re-sampling the one or more orthogonal line segments comprises manipulating the first sequence of points to generate the Low Discrepancy Curve segment;

wherein the Low Discrepancy Curve segment defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

6. The method of claim 4, wherein the Low Discrepancy Curve segments corresponding to the successive pairs of the Low Discrepancy Sequence of points are sequentially connected to form the Low Discrepancy Curve.

7. The method of claim 4,

wherein the region is defined by a coordinate space having a plurality of orthogonal axes, wherein each of the plurality of orthogonal axes corresponds respectively to a dimension of the region;

wherein each of the pair of points has a plurality of coordinates corresponding respectively to the plurality of orthogonal axes;

wherein each of the one or more line segments is parallel to a respective one of the orthogonal axes; and

wherein each of the one or more line segments has a first endpoint and a second endpoint, wherein the first endpoint has a first plurality of coordinates, wherein the second endpoint has a second plurality of coordinates, and wherein said first plurality of

coordinates and said second plurality of coordinates differ only in value of a coordinate corresponding to a respective one of the plurality of orthogonal axes.

8. The method of claim 7,

wherein said one or more orthogonal line segments which connect the pair of points comprises a contiguous sequence of one or more of said line segments corresponding to a specified order of the plurality of orthogonal axes; and

wherein said re-sampling the one or more orthogonal line segments to generate a Low Discrepancy Curve segment comprises re-sampling said contiguous sequence of said one or more of said line segments in the specified order to generate the Low Discrepancy Curve segment.

9. The method of claim 8,

wherein said plurality of orthogonal axes comprises an x axis and a y axis, wherein said region has a dimensionality of two, and wherein said one or more line segments comprises two orthogonal line segments comprising a first line segment and a second line segment;

wherein a first of the pair of points has two coordinates, (x0, y0), corresponding respectively to the x and y axes;

wherein a second of the pair of points has two coordinates, (x1, y1), corresponding respectively to the x and y axes;

wherein each of the line segments has a first endpoint and a second endpoint, wherein the second endpoint of the first line segment is equal to the first endpoint of the second line segment;

wherein said two orthogonal line segments which connect the pair of points comprise a contiguous sequence of said line segments in the specified order; and

wherein said re-sampling the two orthogonal line segments to generate a Low Discrepancy Curve segment comprises re-sampling said contiguous sequence of said line segments in the specified order to generate the Low Discrepancy Curve segment.

10. The method of claim 9,

wherein the specified order of the plurality of orthogonal axes is (x, y);

wherein the first endpoint of a first of the two line segments has coordinates (x0, y0), and the second endpoint of the first of the two line segments has coordinates (x1, y0); and

wherein the first endpoint of a second of the two line segments has coordinates (x1, y0), and the second endpoint of the second of the two line segments has coordinates (x1, y1).

11. The method of claim 9,

wherein the specified order of the plurality of orthogonal axes is (y, x);

wherein the first endpoint of a first of the two line segments has coordinates (x0, y0), and the second endpoint of the first of the two line segments has coordinates (x0, y1);

wherein the first endpoint of a second of the two line segments has coordinates (x0, y1), and the second endpoint of the second of the two line segments has coordinates (x1, y1);

12. The method of claim 8,

wherein said plurality of orthogonal axes comprises an x axis, a y axis, and a z axis, wherein said region has a dimensionality of three, and wherein said one or more line segments comprises three orthogonal line segments comprising a first line segment, a second line segment, and a third line segment;

wherein a first of the pair of points has three coordinates, (x0, y0, z0), corresponding respectively to the x, y, and z axes;

wherein a second of the pair of points has three coordinates, (x1, y1, z1), corresponding respectively to the x, y, and z axes;

wherein each of the line segments has a first endpoint and a second endpoint, wherein the second endpoint of the first line segment is equal to the first endpoint of the second line segment, and wherein the second endpoint of the second line segment is equal to the first endpoint of the third line segment;

wherein said three orthogonal line segments which connect the pair of points comprise a contiguous sequence of said line segments in the specified order; and

wherein said re-sampling the three orthogonal line segments to generate a Low Discrepancy Curve segment comprises re-sampling said contiguous sequence of said line segments in the specified order to generate the Low Discrepancy Curve segment.

13. The method of claim 12,

wherein the specified order of the plurality of orthogonal axes is (x, y, z);

wherein the first endpoint of a first of the three line segments has coordinates (x0, y0, z0) and the second endpoint of the first of the three line segments has coordinates (x1, y0, z0);

wherein the first endpoint of a second of the three line segments has coordinates (x1, y0, z0), and the second endpoint of the second of the three line segments has coordinates (x1, y1, z0); and

wherein the first endpoint of a third of the three line segments has coordinates (x1, y1, z0), and the second endpoint of the third of the three line segments has coordinates (x1, y1, z1).

14. The method of claim 12,

wherein the specified order of the plurality of orthogonal axes is (x, z, y);

wherein the first endpoint of a first of the three line segments has coordinates (x0, y0, z0), and the second endpoint of the first of the three line segments has coordinates (x1, y0, z0);

wherein the first endpoint of a second of the three line segments has coordinates (x1, y0, z0), and the second endpoint of the second of the three line segments has coordinates (x1, y0, z1); and

wherein the first endpoint of a third of the three line segments has coordinates (x1, y0, z1), and the second endpoint of the third of the three line segments has coordinates (x1, y1, z1).

15. The method of claim 12,

wherein the specified order of the plurality of orthogonal axes is (y, z, x);

wherein the first endpoint of a first of the three line segments has coordinates (x0, y0, z0), and the second endpoint of the first of the three line segments has coordinates (x0, y1, z0);

wherein the first endpoint of a second of the three line segments has coordinates (x0, y1, z0), and the second endpoint of the second of the three line segments has coordinates (x0, y1, z1); and

wherein the first endpoint of a third of the three line segments has coordinates (x0, y1, z1), and the second endpoint of the third of the three line segments has coordinates (x1, y1, z1).

16. The method of claim 12,

wherein the specified order of the plurality of orthogonal axes is (y, x, z);

wherein the first endpoint of a first of the three line segments has coordinates (x0, y0, z0), and the second endpoint of the first of the three line segments has coordinates (x0, y1, z0);

wherein the first endpoint of a second of the three line segments has coordinates (x0, y1, z0), and the second endpoint of the second of the three line segments has coordinates (x1, y1, z0); and

wherein the first endpoint of a third of the three line segments has coordinates (x1, y1, z0), and the second endpoint of the third of the three line segments has coordinates (x1, y1, z1).

17. The method of claim 12,

wherein the specified order of the plurality of orthogonal axes is (z, x, y);

wherein the first endpoint of a first of the three line segments has coordinates (x0, y0, z0), and the second endpoint of the first of the three line segments has coordinates (x0, y0, z1);

wherein the first endpoint of a second of the three line segments has coordinates (x0, y0, z1), and the second endpoint of the second of the three line segments has coordinates (x1, y0, z1); and

wherein the first endpoint of a third of the three line segments has coordinates (x1, y0, z1), and the second endpoint of the third of the three line segments has coordinates (x1, y1, z1).

18. The method of claim 12,

wherein the specified order of the plurality of orthogonal axes is (z, y, x);

wherein the first endpoint of a first of the three line segments has coordinates (x0, y0, z0), and the second endpoint of the first of the three line segments has coordinates (x0, y0, z1);

wherein the first endpoint of a second of the three line segments has coordinates (x0, y0, z1), and wherein the second endpoint of the second of the three line segments has coordinates (x0, y1, z1); and

wherein the first endpoint of a third of the three line segments has coordinates (x0, y1, z1), and the second endpoint of the third of the three line segments has coordinates (x1, y1, z1).

19. The method of claim 4,

wherein said re-sampling the plurality of orthogonal line segments comprises:

fitting a curve to a plurality of points comprised in the plurality of orthogonal line segments subject to one or more constraints; and

generating a second plurality of points along the fit curve, wherein said second plurality of points define the Low Discrepancy Curve segment.

20. The method of claim 2, wherein said generating a Low Discrepancy Sequence of points on the object is performed prior to said scanning.

21. The method of claim 2, further comprising:

the object entering the region prior to said scanning the region.

22. The method of claim 2,

wherein said generating a Low Discrepancy Sequence of points in the region and said calculating a Low Discrepancy Curve in the region based on the Low Discrepancy Sequence of points are performed in a preprocessing phase of the method.

23. The method of claim 2,

wherein said generating a Low Discrepancy Sequence of points in the region and said calculating a Low Discrepancy Curve in the region based on the Low Discrepancy Sequence of points are performed offline as a preprocessing operation.

24. The method of claim 2,

wherein, said measuring the region at a plurality of points along the Low Discrepancy Curve is performed in a real time phase of the method.

25. The method of claim 2, wherein said generating a Low Discrepancy Sequence of points on the object and said calculating a Low Discrepancy Curve on the object based on the Low Discrepancy Sequence of points is performed in real time.

26. The method of claim 1, wherein the region has a dimensionality of one of one, two, and three.

27. The method of claim 1, wherein the region has a dimensionality greater than three.

28. The method of claim 1, wherein said scanning the region using a Low Discrepancy Curve scanning scheme comprises:

a) generating a first Low Discrepancy Sequence of points in the region;

b) calculating a first Low Discrepancy Curve segment in the region based on the first Low Discrepancy Sequence of points;

c) scanning a portion of the region along the first Low Discrepancy Curve segment to identify a characteristic of the object;

if the characteristic of the object is not identified, then:

d) generating a second Low Discrepancy Sequence of points in the region based on previous Low Discrepancy Sequence points;

e) calculating a second Low Discrepancy Curve segment in the region based on the second Low Discrepancy Sequence of points;

f) scanning a portion of the region along the second Low Discrepancy Curve segment to identify a characteristic of the object;

g) repeating d) - f) one or more times until the characteristic of the object is identified or until said one or more times equals a threshold number of times.

29. The method of claim 28,

wherein a) and b) are performed offline in a preprocessing phase of the method; and

wherein c) - g) are performed in a real time phase of the method.

30. The method of claim 29,

wherein said second Low Discrepancy Sequence of points includes a last point of an immediately previous Low Discrepancy Curve segment and one or more additional Low Discrepancy Sequence points.

31. The method of claim 29,

wherein c) and f) respectively comprise

measuring the region at a plurality of points along the first Low Discrepancy Curve; and

measuring the region at a plurality of points along the second Low Discrepancy Curve.

32. The method of claim 29, wherein said generating a second Low Discrepancy Sequence of points in the region comprises generating a plurality of points wherein any location in the region is within a specified distance of at least one of the first Low Discrepancy Sequence of points or the second Low Discrepancy Sequence of points.

33. The method of claim 29, wherein said calculating a second Low Discrepancy Curve comprises:

for each successive pair of the second Low Discrepancy Sequence of points:

determining a plurality of orthogonal line segments which connect the pair of points; and

re-sampling the plurality of orthogonal line segments to generate a Low Discrepancy Curve segment;

wherein, the second Low Discrepancy Curve comprises a contiguous sequence of the Low Discrepancy Curve segments from the successive pairs of the second Low Discrepancy Sequence of points.

34. The method of claim 33,

wherein the plurality of orthogonal line segments comprises a first sequence of points, wherein the first sequence of points defines a first trajectory having a first maximum curvature;

wherein said re-sampling the plurality of orthogonal line segments comprises manipulating the first sequence of points to generate the second Low Discrepancy Curve segment;

wherein the second Low Discrepancy Curve segment defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

35. The method of claim 33,

wherein the region is defined by a coordinate space having a plurality of orthogonal axes, wherein each of the plurality of orthogonal axes corresponds respectively to a dimension of the region;

wherein each of the pair of points has a plurality of coordinates corresponding respectively to the plurality of orthogonal axes;

wherein each of the plurality of line segments is parallel to a respective one of the orthogonal axes;

wherein each of the plurality of line segments has a first endpoint and a second endpoint, wherein the first endpoint has a first plurality of coordinates, wherein the second endpoint has a second plurality of coordinates, and wherein said first plurality of coordinates and said second plurality of coordinates differ only in value of a coordinate corresponding to a respective one of the plurality of orthogonal axes;

wherein said plurality of orthogonal line segments which connect the pair of points comprises a contiguous sequence of said line segments corresponding to a specified order of the plurality of orthogonal axes; and

wherein said re-sampling the plurality of orthogonal line segments to generate a Low Discrepancy Curve segment comprises re-sampling said contiguous sequence of said line segments in the specified order to generate the Low Discrepancy Curve segment.

36. The method of claim 33,

wherein said re-sampling the plurality of orthogonal line segments comprises:

fitting a curve to a plurality of points comprised in the plurality of orthogonal line segments subject to one or more constraints; and

generating a second plurality of points along the fit curve, wherein said second plurality of points define the Low Discrepancy Curve segment.

37. The method of claim 29, wherein the region has a dimensionality of one of one, two, and three.

38. The method of claim 29, wherein the region has a dimensionality greater than three.

39. A system for scanning for an object within a region, comprising:

a sensor; and

a computer which is operable to couple to said sensor, said computer comprising:

a CPU; and

a memory medium which is operable to store a scanning program;

wherein said CPU is operable to execute said scanning program to perform:

scanning the region using a Low Discrepancy Curve scanning scheme;

determining one or more characteristics of the object in response to said scanning; and

generating output indicating the one or more characteristics of the object.

40. The system of claim 39, wherein said CPU is further operable to execute said scanning program to perform:

generating a Low Discrepancy Sequence of points in the region; and

calculating a Low Discrepancy Curve in the region based on the Low Discrepancy Sequence of points;

wherein said scanning the region using a Low Discrepancy Curve scanning scheme comprises:

measuring the region at a plurality of points along the Low Discrepancy Curve.

41. The system of claim 40, wherein said generating a Low Discrepancy Sequence of points in the region comprises generating a plurality of points wherein any location in the region is within a specified distance of at least one of the Low Discrepancy Sequence of points.

42. The system of claim 41, wherein said calculating a Low Discrepancy Curve comprises:

for each successive pair of the Low Discrepancy Sequence of points:

determining a plurality of orthogonal line segments which connect the pair of points; and

re-sampling the plurality of orthogonal line segments to generate a Low Discrepancy Curve segment;

wherein, the Low Discrepancy Curve comprises a contiguous sequence of the Low Discrepancy Curve segments from the successive pairs of the Low Discrepancy Sequence of points.

43. The system of claim 42,

wherein the plurality of orthogonal line segments comprises a first sequence of points, wherein the first sequence of points defines a first trajectory having a first maximum curvature;

wherein said re-sampling the plurality of orthogonal line segments comprises manipulating the first sequence of points to generate the Low Discrepancy Curve segment;

wherein the Low Discrepancy Curve segment defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

44. The system of claim 42, wherein the Low Discrepancy Curve segments corresponding to the successive pairs of the Low Discrepancy Sequence of points are sequentially connected to form the Low Discrepancy Curve.

45. The system of claim 42,

wherein the region is defined by a coordinate space having a plurality of orthogonal axes, wherein each of the plurality of orthogonal axes corresponds respectively to a dimension of the region;

wherein each of the pair of points has a plurality of coordinates corresponding respectively to the plurality of orthogonal axes;

wherein each of the plurality of line segments is parallel to a respective one of the orthogonal axes;

wherein each of the plurality of line segments has a first endpoint and a second endpoint, wherein the first endpoint has a first plurality of coordinates, wherein the second endpoint has a second plurality of coordinates, and wherein said first plurality of coordinates and said second plurality of coordinates differ only in value of a coordinate corresponding to a respective one of the plurality of orthogonal axes.

46. The system of claim 45,

wherein said plurality of orthogonal line segments which connect the pair of points comprises a contiguous sequence of said line segments corresponding to a specified order of the plurality of orthogonal axes; and

wherein said re-sampling the plurality of orthogonal line segments to generate a Low Discrepancy Curve segment comprises re-sampling said contiguous sequence of said line segments in the specified order to generate the Low Discrepancy Curve segment.

47. The system of claim 42,

wherein said re-sampling the plurality of orthogonal line segments comprises:

fitting a curve to a plurality of points comprised in the plurality of orthogonal line segments subject to one or more constraints; and

generating a second plurality of points along the fit curve, wherein said second plurality of points define the Low Discrepancy Curve segment.

48. The system of claim 40, wherein said generating a Low Discrepancy Sequence of points on the object is performed prior to said scanning.

49. The system of claim 40, further comprising:

wherein said generating a Low Discrepancy Sequence of points in the region and said calculating a Low Discrepancy Curve in the region based on the Low Discrepancy Sequence of points are performed in a preprocessing phase.

50. The system of claim 40, wherein said generating a Low Discrepancy Sequence of points on the object and said calculating a Low Discrepancy Curve on the object based on the Low Discrepancy Sequence of points is performed in real time.

51. The system of claim 39, wherein the region has a dimensionality of one of one, two, and three.

52. The system of claim 39, wherein the region has a dimensionality greater than three.

53. The system of claim 39, wherein said scanning the region using a Low Discrepancy Curve scanning scheme comprises:

a) generating a first Low Discrepancy Sequence of points in the region;

b) calculating a first Low Discrepancy Curve segment in the region based on the first Low Discrepancy Sequence of points;

c) scanning a portion of the region along the first Low Discrepancy Curve segment to identify a characteristic of the object;

if the characteristic of the object is not identified, then:

d) generating a second Low Discrepancy Sequence of points in the region based on previous Low Discrepancy Sequence points;

e) calculating a second Low Discrepancy Curve segment in the region based on the second Low Discrepancy Sequence of points;

f) scanning a portion of the region along the second Low Discrepancy Curve segment to identify a characteristic of the object;

g) repeating d) - f) one or more times until the characteristic of the object is identified or until said one or more times equals a threshold number of times.

54. The system of claim 53,

wherein a) and b) are performed offline in a preprocessing phase; and

wherein c) - g) are performed in a real time phase.

55. The system of claim 54,

wherein said second Low Discrepancy Sequence of points includes a last point of an immediately previous Low Discrepancy Curve segment and one or more additional Low Discrepancy Sequence points.

56. The system of claim 53, wherein said generating a second Low Discrepancy Sequence of points in the region comprises generating a plurality of points wherein any location in the region is within a specified distance of at least one of the first Low Discrepancy Sequence of points or the second Low Discrepancy Sequence of points.

57. The system of claim 53, wherein said calculating a second Low Discrepancy Curve comprises:

for each successive pair of the second Low Discrepancy Sequence of points:

determining a plurality of orthogonal line segments which connect the pair of points; and

re-sampling the plurality of orthogonal line segments to generate a Low Discrepancy Curve segment;

wherein, the second Low Discrepancy Curve comprises a contiguous sequence of the Low Discrepancy Curve segments from the successive pairs of the second Low Discrepancy Sequence of points.

58. The system of claim 57,

wherein the plurality of orthogonal line segments comprises a first sequence of points, wherein the first sequence of points defines a first trajectory having a first maximum curvature;

wherein said re-sampling the plurality of orthogonal line segments comprises manipulating the first sequence of points to generate the second Low Discrepancy Curve segment;

wherein the second Low Discrepancy Curve segment defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

59. The system of claim 56,

wherein said re-sampling the plurality of orthogonal line segments comprises:

fitting a curve to a plurality of points comprised in the plurality of orthogonal line segments subject to one or more constraints; and

generating a second plurality of points along the fit curve, wherein said second plurality of points define the Low Discrepancy Curve segment.

60. The system of claim 53, wherein the region has a dimensionality of one of one, two, and three.

61. A memory medium containing program instructions which are executable to scan for an object within a region, wherein said program instructions are executable to perform:

scanning the region using a Low Discrepancy Curve scanning scheme;

determining one or more characteristics of the object in response to said scanning; and

generating output indicating the one or more characteristics of the object.

62. The memory medium of claim 61, wherein said program instructions are further executable to perform:

generating a Low Discrepancy Sequence of points in the region; and

calculating a Low Discrepancy Curve in the region based on the Low Discrepancy Sequence of points;

wherein said scanning the region using a Low Discrepancy Curve scanning scheme comprises:

measuring the region at a plurality of points along the Low Discrepancy Curve.

63. The memory medium of claim 62, wherein said generating a Low Discrepancy Sequence of points in the region comprises generating a plurality of points wherein any location in the region is within a specified distance of at least one of the Low Discrepancy Sequence of points.

64. The memory medium of claim 62, wherein said calculating a Low Discrepancy Curve comprises:

for each successive pair of the Low Discrepancy Sequence of points:

determining one or more orthogonal line segments which connect the pair of points; and

re-sampling the one or more orthogonal line segments to generate a Low Discrepancy Curve segment;

wherein the Low Discrepancy Curve comprises a contiguous sequence of the Low Discrepancy Curve segments from the successive pairs of the Low Discrepancy Sequence of points.

65. The memory medium of claim 64,

wherein the one or more orthogonal line segments comprises a first sequence of points, wherein the first sequence of points defines a first trajectory having a first maximum curvature;

wherein said re-sampling the one or more orthogonal line segments comprises manipulating the first sequence of points to generate the Low Discrepancy Curve segment;

wherein the Low Discrepancy Curve segment defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

66. The memory medium of claim 64, wherein the Low Discrepancy Curve segments corresponding to the successive pairs of the Low Discrepancy Sequence of points are sequentially connected to form the Low Discrepancy Curve.

67. The memory medium of claim 64,

wherein the region is defined by a coordinate space having a plurality of orthogonal axes, wherein each of the plurality of orthogonal axes corresponds respectively to a dimension of the region;

wherein each of the pair of points has a plurality of coordinates corresponding respectively to the plurality of orthogonal axes;

wherein each of the one or more line segments is parallel to a respective one of the orthogonal axes; and

wherein each of the one or more line segments has a first endpoint and a second endpoint, wherein the first endpoint has a first plurality of coordinates, wherein the second endpoint has a second plurality of coordinates, and wherein said first plurality of coordinates and said second plurality of coordinates differ only in value of a coordinate corresponding to a respective one of the plurality of orthogonal axes.

68. The memory medium of claim 67,

wherein said one or more orthogonal line segments which connect the pair of points comprises a contiguous sequence of one or more of said line segments corresponding to a specified order of the plurality of orthogonal axes; and

wherein said re-sampling the one or more orthogonal line segments to generate a Low Discrepancy Curve segment comprises re-sampling said contiguous sequence of said one or more of said line segments in the specified order to generate the Low Discrepancy Curve segment.

69. The memory medium of claim 68,

wherein said plurality of orthogonal axes comprises an x axis and a y axis, wherein said region has a dimensionality of two, and wherein said one or more line segments comprises two orthogonal line segments comprising a first line segment and a second line segment;

wherein a first of the pair of points has two coordinates, (x0, y0), corresponding respectively to the x and y axes;

wherein a second of the pair of points has two coordinates, (x1, y1), corresponding respectively to the x and y axes;

wherein each of the line segments has a first endpoint and a second endpoint, wherein the second endpoint of the first line segment is equal to the first endpoint of the second line segment;

wherein said two orthogonal line segments which connect the pair of points comprise a contiguous sequence of said line segments in the specified order; and

wherein said re-sampling the two orthogonal line segments to generate a Low Discrepancy Curve segment comprises re-sampling said contiguous sequence of said line segments in the specified order to generate the Low Discrepancy Curve segment.

70. The memory medium of claim 68,

wherein said plurality of orthogonal axes comprises an x axis, a y axis, and a z axis, wherein said region has a dimensionality of three, and wherein said one or more line segments comprises three orthogonal line segments comprising a first line segment, a second line segment, and a third line segment;

wherein a first of the pair of points has three coordinates, (x0, y0, z0), corresponding respectively to the x, y, and z axes;

wherein a second of the pair of points has three coordinates, (x1, y1, z1), corresponding respectively to the x, y, and z axes;

wherein each of the line segments has a first endpoint and a second endpoint, wherein the second endpoint of the first line segment is equal to the first endpoint of the second line segment, and wherein the second endpoint of the second line segment is equal to the first endpoint of the third line segment;

wherein said three orthogonal line segments which connect the pair of points comprise a contiguous sequence of said line segments in the specified order; and

wherein said re-sampling the three orthogonal line segments to generate a Low Discrepancy Curve segment comprises re-sampling said contiguous sequence of said line segments in the specified order to generate the Low Discrepancy Curve segment.

71. The memory medium of claim 64,

wherein said re-sampling the plurality of orthogonal line segments comprises:

fitting a curve to a plurality of points comprised in the plurality of orthogonal line segments subject to one or more constraints; and

generating a second plurality of points along the fit curve, wherein said second plurality of points define the Low Discrepancy Curve segment.

72. The memory medium of claim 62, wherein said generating a Low Discrepancy Sequence of points on the object is performed prior to said scanning.

73. The memory medium of claim 62, wherein said generating a Low Discrepancy Sequence of points on the object is performed during said scanning.

74. The memory medium of claim 62,

wherein said generating a Low Discrepancy Sequence of points in the region and said calculating a Low Discrepancy Curve in the region based on the Low Discrepancy Sequence of points are performed offline in a preprocessing phase.

75. The memory medium of claim 62,

wherein said generating a Low Discrepancy Sequence of points in the region and said calculating a Low Discrepancy Curve in the region based on the Low Discrepancy Sequence of points are performed offline as a preprocessing operation.

76. The memory medium of claim 62,

wherein, said measuring the region at a plurality of points along the Low Discrepancy Curve is performed online in a real time phase.

77. The memory medium of claim 62, wherein said generating a Low Discrepancy Sequence of points on the object and said calculating a Low Discrepancy Curve on the object based on the Low Discrepancy Sequence of points is performed in real time.

78. The memory medium of claim 61, wherein the region has a dimensionality of one of one, two, and three.

79. The memory medium of claim 61, wherein the region has a dimensionality greater than three.

80. The memory medium of claim 61, wherein said scanning the region using a Low Discrepancy Curve scanning scheme comprises:

a) generating a first Low Discrepancy Sequence of points in the region;

b) calculating a first Low Discrepancy Curve segment in the region based on the first Low Discrepancy Sequence of points;

c) scanning a portion of the region along the first Low Discrepancy Curve segment to identify a characteristic of the object;

if the characteristic of the object is not identified, then:

d) generating a second Low Discrepancy Sequence of points in the region based on previous Low Discrepancy Sequence points;

e) calculating a second Low Discrepancy Curve segment in the region based on the second Low Discrepancy Sequence of points;

f) scanning a portion of the region along the second Low Discrepancy Curve segment to identify a characteristic of the object;

g) repeating d) - f) one or more times until the characteristic of the object is identified or until said one or more times equals a threshold number of times.

81. The memory medium of claim 80,

wherein a) and b) are performed offline in a preprocessing phase; and

wherein c) - g) are performed online in a real time phase.

82. The memory medium of claim 81,

wherein said second Low Discrepancy Sequence of points includes a last point of an immediately previous Low Discrepancy Curve segment and one or more additional Low Discrepancy Sequence points.

83. The memory medium of claim 81,

wherein c) and f) respectively comprise

measuring the region at a plurality of points along the first Low Discrepancy Curve; and

measuring the region at a plurality of points along the second Low Discrepancy Curve.

84. The memory medium of claim 81, wherein said generating a second Low Discrepancy Sequence of points in the region comprises generating a plurality of points wherein any location in the region is within a specified distance of at least one of the first Low Discrepancy Sequence of points or the second Low Discrepancy Sequence of points.

85. The memory medium of claim 81, wherein said calculating a second Low Discrepancy Curve comprises:

for each successive pair of the second Low Discrepancy Sequence of points:

determining a plurality of orthogonal line segments which connect the pair of points; and

re-sampling the plurality of orthogonal line segments to generate a Low Discrepancy Curve segment;

wherein, the second Low Discrepancy Curve comprises a contiguous sequence of the Low Discrepancy Curve segments from the successive pairs of the second Low Discrepancy Sequence of points.

86. The memory medium of claim 85,

wherein the plurality of orthogonal line segments comprises a first sequence of points, wherein the first sequence of points defines a first trajectory having a first maximum curvature;

wherein said re-sampling the plurality of orthogonal line segments comprises manipulating the first sequence of points to generate the second Low Discrepancy Curve segment;

wherein the second Low Discrepancy Curve segment defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

87. The memory medium of claim 85,

wherein the region is defined by a coordinate space having a plurality of orthogonal axes, wherein each of the plurality of orthogonal axes corresponds respectively to a dimension of the region;

wherein each of the pair of points has a plurality of coordinates corresponding respectively to the plurality of orthogonal axes;

wherein each of the plurality of line segments is parallel to a respective one of the orthogonal axes;

wherein each of the plurality of line segments has a first endpoint and a second endpoint, wherein the first endpoint has a first plurality of coordinates, wherein the second endpoint has a second plurality of coordinates, and wherein said first plurality of coordinates and said second plurality of coordinates differ only in value of a coordinate corresponding to a respective one of the plurality of orthogonal axes;

wherein said plurality of orthogonal line segments which connect the pair of points comprises a contiguous sequence of said line segments corresponding to a specified order of the plurality of orthogonal axes; and

wherein said re-sampling the plurality of orthogonal line segments to generate a Low Discrepancy Curve segment comprises re-sampling said contiguous sequence of said line segments in the specified order to generate the Low Discrepancy Curve segment.

88. The memory medium of claim 85,

wherein said re-sampling the plurality of orthogonal line segments comprises:

fitting a curve to a plurality of points comprised in the plurality of orthogonal line segments subject to one or more constraints; and

generating a second plurality of points along the fit curve, wherein said second plurality of points define the Low Discrepancy Curve segment.

89. The memory medium of claim 81, wherein the region has a dimensionality of one of one, two, and three.

90. The memory medium of claim 81, wherein the region has a dimensionality greater than three.

91. A method for scanning for an object within a region, comprising:

generating a Low Discrepancy Sequence of points in the region; and

calculating a curve in the region based on the Low Discrepancy Sequence of points;

scanning the region using the curve;

determining one or more characteristics of the object in response to said scanning; and

generating output indicating the one or more characteristics of the object.

92. The method of claim 91,

wherein said calculating the curve in the region based on the Low Discrepancy Sequence of points comprises calculating the curve such that the curve is substantially proximate to the Low Discrepancy Sequence of points in the region.

93. The method of claim 91,

wherein said calculating the curve in the region based on the Low Discrepancy Sequence of points comprises calculating the curve such that the curve substantially passes through the Low Discrepancy Sequence of points in the region.

94. The method of claim 91, wherein said calculating a curve comprises:

for each successive pair of the Low Discrepancy Sequence of points:

determining one or more orthogonal line segments which connect the pair of points; and

re-sampling the one or more orthogonal line segments to generate a curve segment;

wherein the curve comprises a contiguous sequence of the curve segments from the successive pairs of the Low Discrepancy Sequence of points.

95. The method of claim 94,

wherein the one or more orthogonal line segments comprises a first sequence of points, wherein the first sequence of points defines a first trajectory having a first maximum curvature;

wherein said re-sampling the one or more orthogonal line segments comprises manipulating the first sequence of points to generate the curve segment;

wherein the curve segment defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

96. The method of claim 94, wherein the curve segments corresponding to the successive pairs of the Low Discrepancy Sequence of points are sequentially connected to form the curve.